

What is claimed is:

Sub A1
1. An active pixel sensor device, comprising:

2 a pixel sensor array of photosensor elements, arranged in
3 logical units, each photosensor element defining a pixel with a
4 CMOS photosensor element, an in-pixel buffer element and an in-
5 pixel selector element, said photosensor elements arranged in an
6 array; and

7 a plurality of analog-to-digital converters, formed on the
8 same substrate as said pixel sensor array, and each associated
9 with at least two logical units of the pixel sensor array, each
10 analog-to-digital converter including an ADC portion which
11 receives an analog signal from one of said pixel sensors when
12 said selector element is enabled, and converts said analog signal
13 to a digital value, and at least two unit storage elements,
14 associated with said analog to digital converter, each storing
15 one unit of digital information indicating the output signal.

1 2. A sensor as in claim 1, wherein said logical units are
2 lines of the array including either columns of the array or rows
3 of the array.

1 3. A device as in claim 2, wherein said analog-to-digital
2 converters are associated with at least two adjacent lines of the
3 array.

1 4. A device as in claim 3, further comprising a readout
2 controller, controlling readout of information from the
3 photosensor elements, by controlling said analog-to-digital
4 converters to each convert information from a first line of the
5 array, to store said information from the first line of the array
6 in one of said unit storage elements, then to read out a second
7 line of the array, and store said information from said second
8 line of the array in the other of said unit storage elements, and
9 then to read out the information from all of said unit storage
10 elements in a desired order.

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1 5. A method of operating a pixel sensor array, comprising:
2 obtaining a pixel sensor array of photosensitive elements,
3 each having a photosensitive element in a pixel, a buffer in said
4 pixel associated with said photosensitive element, and a selector
5 transistor in said pixel which is enabled to allow a signal from
6 said pixel to pass, and disabled to block the signal from
7 passing;

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